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## **ORACLE DATABASE**

### **Q1. DISCRIBE ORACLE MEMORY STRUCTURE AND BACKGROUND PROCESSES.**

Oracle uses memory to store various information:

- Program code being executed.
  - Information about a connected session, even if it is not currently active
  - Information that is shared and communicated among oracle processes
- The basic memory structures associated with oracle include:

- **SYSTEM GLOBAL AREA(SGA)**
- **PROGRAM GLOBAL AREA(PGA)**

#### **SYSTEM GLOBAL AREA(SGA)**

Is the group of shared memory structures that contain data and control information for one oracle database instance.

SGA contain the following data structures:

- Database buffer cache
- Shared pool
- Redo log buffer
- Data dictionary cache
- Other miscellaneous information
- Optional components of the SGA
  - **Large pool:** is optional area used to buffer large I/O request for various server processes.
  - **Java pool:** is an area of memory that is used for all session specific java code and data within the java virtual machine (JVM).

#### **PROGRAM GLOBAL AREA**

Is the memory region containing data and control information for a single process (server or background) sometime called “a process global area”. PGA is nonshared memory area to which a process can write.

### BACKGROUND PROCESS

- DATABASE WRITER( DBWR):writes modified blocks from the database buffer cache to the data file
- LOG WRITER( LGWR): write redo log entries to disk
- CHECKPOINT( CKPT):responsible for signaling database writer at checkpoint and updating all the data file and control files of the database to indicate the most recent checkpoint
- SYSTEM MONITOR( SMMON):perform instance recovery when failed instance is restarted
- PROCESS MONITOR( PMON): perform recovery when user failure ○ ARCHIVER(ARCn): copy the online files
- RECOVERER(RECO): recovering the transaction that are pending

## Q2. DESCRIBE ORACLE LOGICAL AND PHYSICAL STORAGE STUCTURES

### LOGICAL STORAGE STRUCTURE

**Tablespace:** is a storage location where the actual data underlying database object can be kept.

### TYPES OF TABLESPACE

- ✓ **PERMANENT:** you use permanent tablespace to store your user and application data
- ✓ **UNDO:** oracle database uses undo data to roll back transactions, to provide read consistency, to help with database recovery and enable features such as oracle flashback query.
- ✓ **TEMPORARY:** are used for storing temporary data.

### PHYSICAL STORAGE STRUCTURE

- ✓ **Control files:** contains data about the oracle database itself.
- ✓ **Data files:** store the actual data. Each data file is associated with only one database and tablespace.
- ✓ **Redo log files:** these file are most useful to minimize loss of important data in event of system restart or shutdown.